வீரன்

“V”Ran Securty Systems (Group Project)

Cover By:- Asgon Systems

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'V'RAN Security System.

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றோயல் கல்லூரி உ/த 2004

Contents

For '<u>Manual CD</u>' and demonstration of the system ask one of our Group Members.

Introduction:

Our product / project is a fully functional, high performance security system, which includes card with pinnumbers as a special feature.

அறிமுகம்

எமது தயாரிப்பு / செயற்பாடு இது ஒரு முழுமையான செயற்திறனையும் உயர் செயல்வளத்தையும் கொண்ட ஒரு பாதுகாப்பு கட்டமைப்பாகும். இதன் ஒரு விசேட அம்சமாக தனித்த குறியீட்டெண்களை கொண்ட அட்டைகளை குறிப்பிடலாம்.

Objective

The main objective of our project crew is to produce a high class security system. which included cards with their own pin-num-bers. Our device has got it's own flexibility to connect any other security device such as an electric fence with it.

குறிக்கோள்

எமது செயற்றிட்டக்குழுவின் முதன்மையான குறிக்கோ-ளாக இருந்தது, ஒரு உயர்தர பாதுகாப்பு வசதியை வழங்கக்கூடியதும் குறியீட்டு எண் அட்டைகளை கொண்டதும் ஆன ஒரு பயன்படு பொறியை உருவாக்குதல் ஆகும். எமது உபகரணமானது பல விசேட தன்மைகளை கொண்டிருப்பதுடன் இதனுடன் வேறு பல பாதுகாப்பு சாதனங்களை இணைக்கும் வசதியையும் கொண்டது.

Previlages

Our Product's performance is high quality, but it costs a law amount to build, compairing to similar products in market.

The high sencitive parts used with our product ensure unerrupted functioning.

Our device can be used in shops, houses offices and many outhe other places.

This can be used not only for security purposes but for many other need, as our main board can be modified simply and easily.

நன்மைகள்

எமது தயாரிப்பானது மிக அதி உயர் தரத்தை உடையதாகவும், தயாரிப்பு நோக்கமும் என்பதும் இதுபோன்ற வேறு தயாரிப்புகளுடன் ஒப்பிடு கையில் மலிவானது என்பதும் எமக்கு ஒரு விசேட தன்மை ஆகும்.

உயர் உஷ்ணமிக்க பகுதிகள் பாவிக்கப்பட்டு உள்ளதால் தொடர் செயற்பாடு உறுதிசெய்யப் படுகின்றது.

எமது தயாரிப்பானது கடைகள் வீடுகள் அலுவலகங்கள் போன்ற பல இடங்களில் பாவிக்கமுடியும்.

இது பாதுகாப்பு தேவைகளுக்காகவுமன்றி வேறு தேவைகளுக்கும் சிறு மாற்றங்களின் பின்னர் பாவிக்க முடியும்.

Resourses

The below listed equpments and parts are mainly used for making our device

* CMOS 4081, quad 2input "And" gate IC
* Various capasitors, resistors, diodes etc.
* Multi purpose circutit board.
* Power supply units
* Foil papers
* Used - Non functional CD-Rom Drive.
* Plastic Cards
* Stainles steal pins
* Other Circut making equpments.
* Casing and wires.

பயன்படுத்திய வளங்கள்

கீழே தரப்படும் பொருட்கள் எமது ஆய்வில் முக்கியமாக பயன்படுத்தப்பட்டன.

* சீமோஸ் 4081, குவாட் இரு உள்ளீட்டு அண்ட்' கதவு தொகையிடும் சுற்று
* கொள்ளளவிகள் தடையாக்கிகள், ட்ரான்சிஸ்டர், டையோட்கள் உட்பட இலத்திரனியல் சுற்றுகளை செய்ய தேவையான பொருட்கள்.
* பல்பயன் அச்சுப்பலகை.
* மின் வழங்கல் பகுதி
* அலுமினியத் தாள்கள்
* பாவித்த, பழைய குளிரூட்டி உள்ளீட்டகம்
* பிளாஸ்ரிக் அட்டைகள்
* ஒளியில் உணரிகள்
* வெள்ளீயம், வயர்கள்.

Specialities.

* Internal power suppdy units ensure continus functionging of the system in case of power failear.

* An alarming unit will be switched on if any one tries to open the casing of the device (interal Alarm Unit)

* All the sub devices used are combined as one set.

* The card and the pinnumber ensure double security for the system.

* 15 V 'Main System circut' gives the ability of functioning in internal power suppdy.

விசேட தன்மைகள்

* உள்ளக மின்வழங்கலினால் எமது தொழிற்பாட்டின் தொடர் தொழிற்பாடு உறுதி செய்யப்படும். இதனால் தொடர்ந்து தொழிற்பாடு நடைபெறுவதால் மின்தடையினால் எவ்வித இழப்பும் ஏற்படாது.

* எமது தொழிற்பாட்டின் உறைகளை பூட்டப்படுவதால் அனைத்தும் நிறைந்த பாதுகாப்பை உறுதிப்படுத்தும்.

* அனைத்து உபகரணங்களும் ஒன்றாக இணைக்கப்பட்டுள்ளன.

* அடைப்பு, இறுக்கிய பெட்டி இவ்விரு இரட்டை பாதுகாப்பை உறுதிசெய்யும்.

* 15 V 'மிதமான அழுத்தம்' உள்ளமையின் வழக்கின் தொழிற்படும் தன்மையை வழங்குகிறது.

Time Frame

June	2002	Selecting the type of the project
July	2002	Selecting the project and title
August	2002	Collecting the needed Knowledge from books, ~~an~~ websites, magazines, etc.
September	2002	Collecting the needed resources
October	2002	Final Correcting and Building of the Mainboard.
November	2002	
December	2002	
January	2003	Building of the Key Pad, Card Drive, Power supply Unit and the alarming part.
February	2003	
March	2003	
April	2003	Joining all the units together
May	2003	Testing the unit and preparing the report.

THE Summery

- First we got the idea of doing something on electronics
- Then we decided to ~~do~~ make an electronic lock.
- We studied about the 'gates' from some book with the help of Mr. F. A. Faiz.
- We got this IC and the details of its functioning by reffering some books and from the software "Shematic Library"
- We designed the main system circuit.
- Mr. Ron J, a German Engineer helped us to do the resetting part of our ~~M.S.C.~~ Main System circuit. We got touched with him when we were chatting on an educational website
- We used "PCB Express" and "Shematic Express" to design our circuit, with the help of Mr. F. A. Faiz.

How to Unlock?

* Insert the card into the Card Drive.

* Type the correct pin number of the card given on the Key Pad.

* The datas through the card drive and key pad goes to the M.S.C

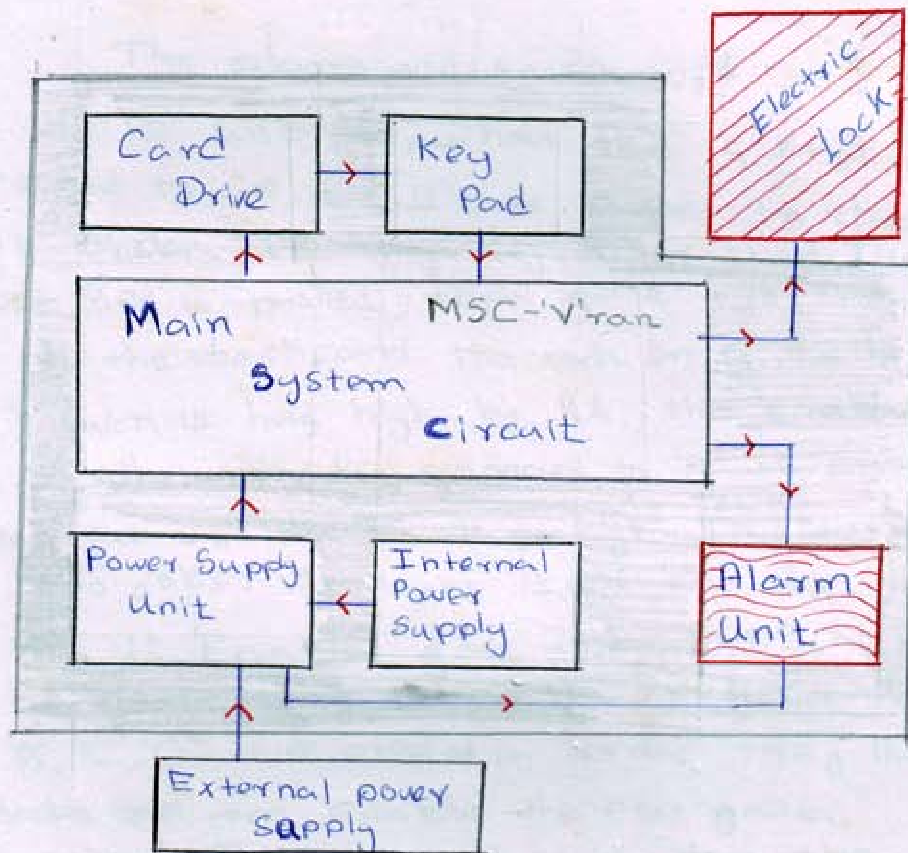
* If the pin number you have typed match with the one of your card, then the M.S.C send the signal to Unlock the lock.

* If the pin number doesn't match, then the alarm rings.

* The M.S.C will be resetted if you ~~write~~ ~~a~~ type a wrong number. So you will have to retype the number.

* By chance if the Alarm doesn't switches off, you will have to press the reset button ~~be~~ before retyping the pin number.

System Diagram



How the system functions?

I. Main System Circuit (M.S.C)

The IC is a quad 2 input 'And' gate, a CMOS 4081. These gates produce a *High* output, when *Both* the inputs are *High*. When the Keys wired to 'E' is pressed, current through R1 and D1 switches Q5 on. The relay energizes; and Q5 is 'latched On' by R8. Thus pressing a single Key sets the Alarm.

The alarm will switch off and the lock will be unlocked, when the 4 keys connected to "A, B, C, D" are pushed in the right order. If any Key other than the correct Key is pushed, then gate 1 is Knocked out of the stack, and the code entry fails. Pin 1 which is held high by R4, this 'enables' gate 1. When the key connected to 'A' is pressed, the out put at pin 3 will go high. This out put does two jobs. It locks itself 'ON' through R2 and it 'Enables' gate 2, by pin 5, high. In the similar way, when the keys connec to 'B', 'C', 'D' are pressed in order they lock themselves 'ON' and 'Enables' the next gate. But when D is pressed, it does the same as other pins and also, at pin 10, turns Q4 ON'. This takes the base of Q5 to ground, switching it off and letting the relay drop out. This switches the alarm of and unlocks the lock.

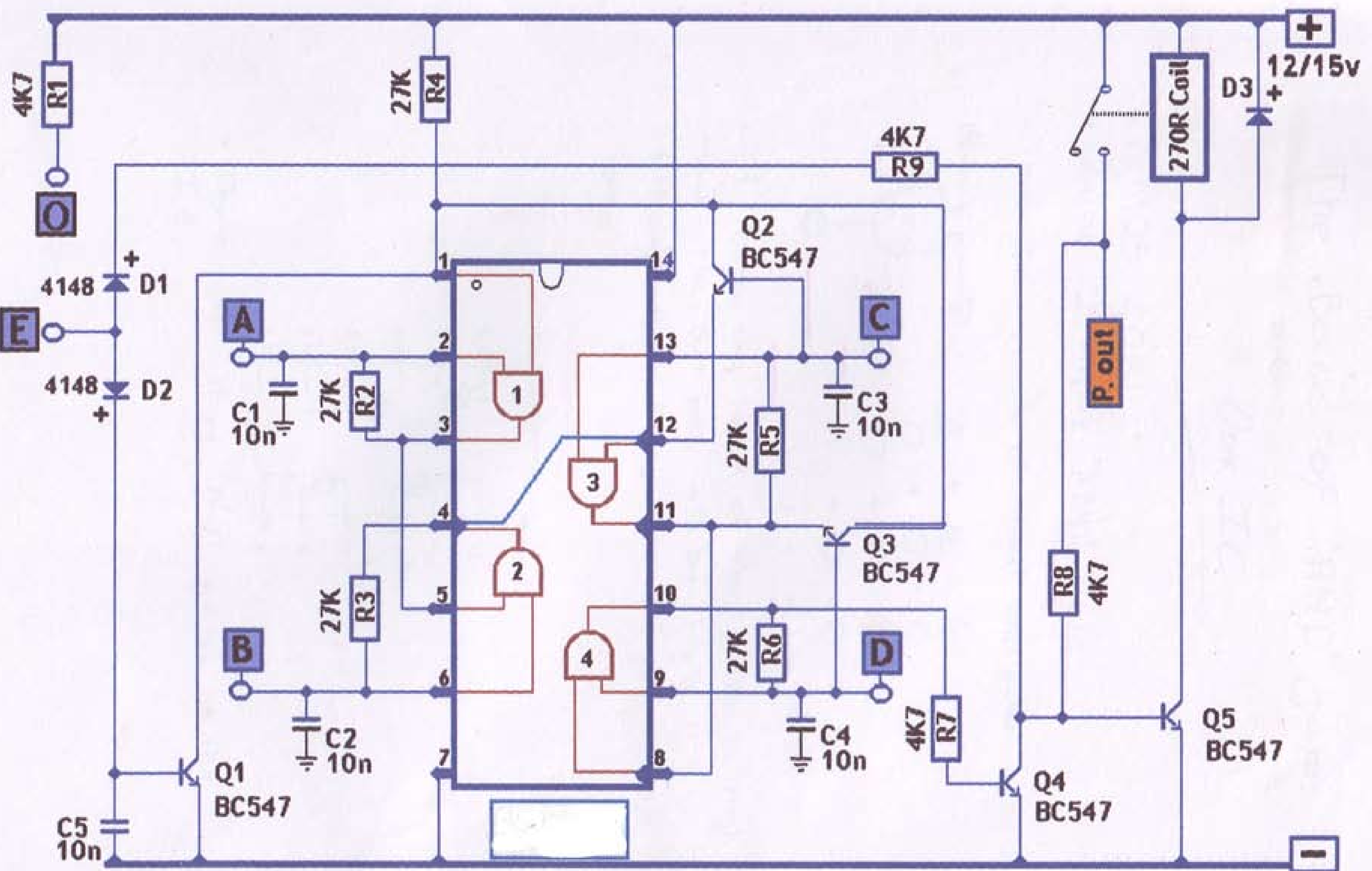
Whenever a key which is connected to 'E' is pressed, pin 1 takes low and the circuit is reset. In addition, if 'E' or 'D' is Pressed out of sequence, then Q2 or Q3 will take pin 1 low and the circuit will reset. Thus nothing will happen until 'A' is pressed. Then if any key other tan 'B' is pressed, the circuit will reset. The same reasoning applies to 'C' and 'D'.

II Card Drive

The ports 'A, B, C, D, E' of the "Main system circuit' are connectd to the five narator pins of the Card Drive. These pins reads the data on the card and sends the analized data from card drive to the Key pad through a 10 line data cable.

III Key Pad

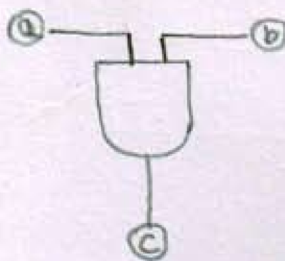
We are using a Keys Key pad which will get the input of 10 line cable and prosess with the Key pressing events and send the signalc to the 'O' port of the 'Main System Circuit'.



4K7
R1
O
27K
R4
4K7
R9
270R Coil
D3
12/15v
+
-
4148
D1
E
4148
D2
A
B
C
D
C1
10n
C2
10n
C3
10n
C4
10n
C5
10n
27K
R2
27K
R3
27K
R5
27K
R6
4K7
R7
R8
4K7
P. out
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Q1
BC547
Q2
BC547
Q3
BC547
Q4
BC547
Q5
BC547

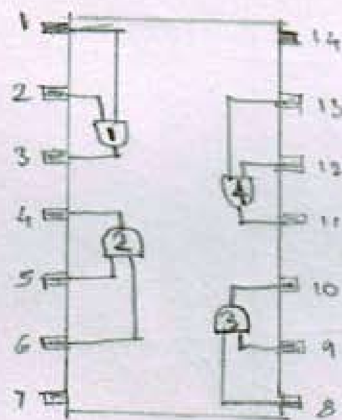
The Basic of "AND" gates and Our IC

* CMOS 4081
* Quad 2 input "AND" gate
* This IC consist of four 'AND' gates.



a	+	b	=	c
0	+	0	=	0
0	+	1	=	0
1	+	0	=	0
1	+	1	=	1

* If both the input of the gate is high then the out put will be high.
  At any other cases the out put will be low.



* There are four 'And' gates in this IC.

We thank you all...

Mr. Ron J , Electrnical Engineer - Germany,
for the Resetting Part of M.S.C.

Mr. F.A. Faiz, Engineer - Canada (Srilankan),
for providing us the PCB designing Software

Parents of Vijiram,
for providing us the internet facilities.

'e-panai' Multimedia Creations,
for designing the presentation.

'Asgon Systems',
for designing the coverpage and
for making the presentaion CD.

All our Parents,

All others who had helped us in any other forms.

We thank you all, you are the people who had made our efforts sucess.

Reference

The art of Electronics - 2nd Edition - 1995
by Paul Horowitz and Winfield Hill
Cambridge University Press

Design and Technology - 2nd Edition - 1995
Cambridge University Press

Basic Electronics for Tomorrow's World
by Len Joens -2nd Edition - 1996
Cambridge University Press

Macmillan College Workout Series - Electronics
by G. Waterworth.

"mit edu" Website
by Ron J

Life skills Development Project (Individual/~~Group~~) Group

Name of Child: .... Grade: .... Year: ....

Co/Royal College , Colombo 07.

Topic : ....Viran.......Security Systems. (An Electronic Device)

....

....

Guidelines and requirements - ....

1. Selection of Project:

		A	B	C	D	E
Objectives	relevance,knowledge on topic,expected,standard	✓				
Planning	whether methodical	✓				

2. Sources and resources

	A	B	C	D	E
Selection of human resources	✓				
Selection of material resources	✓				
Obtaining data	✓				

3. Process

	A	B	C	D	E
working within time frame work	✓				
field work book/observation/ application of graphs,charts etc.	✓				
teamwork/integration	✓				
decision making/following instructions	✓				

4. Results

	A	B	C	D	E
over all appearance/Service	✓				
Project Report (finishing/contents)	✓				
Structure conclusions and suggestions	✓				
Total evaluations	A				

Special Remarks: ....
....
....

I certify that above mentioned student/group of students has completed this project.

Rayinah
....
Teacher in charge-Projects

....
Project Team Co-ordinator

....
Official Frank of the Principal

Date: ....

Notes -

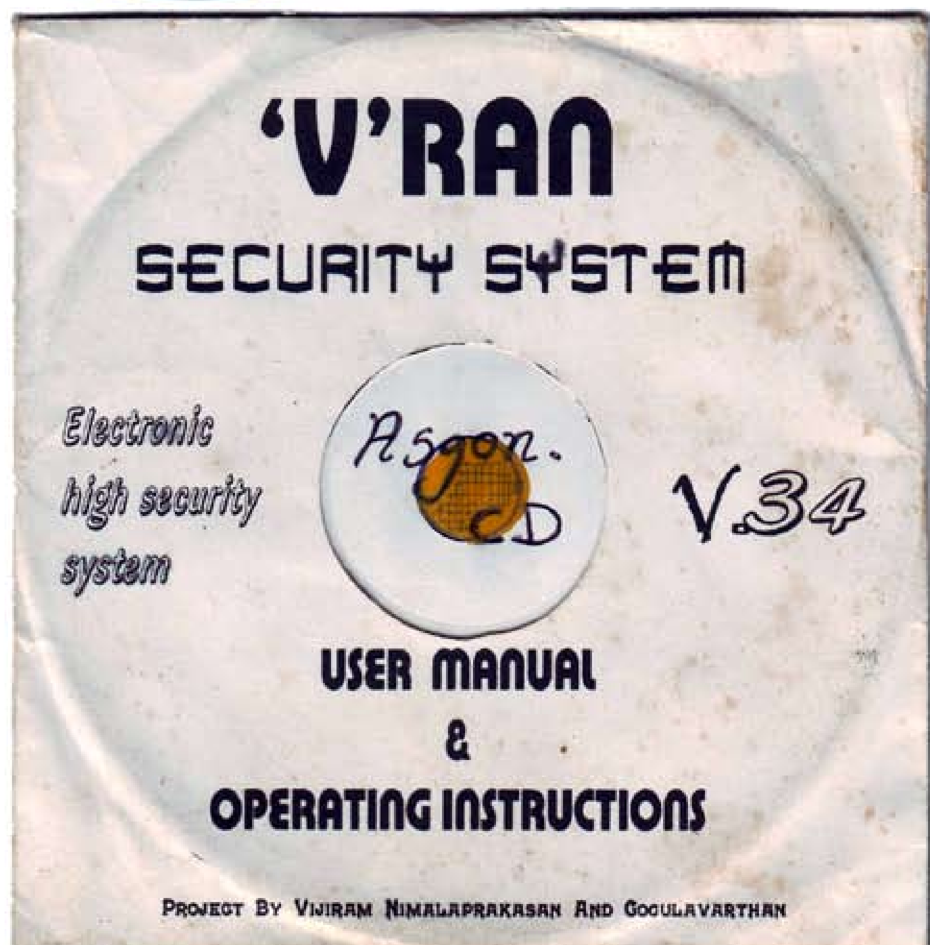
A - Excellent
B - good
C - satisfactory
D - can be improved
E - not satisfactory

The above guide lines be followed in evaluating the individual/group project report.

It should be a continous assessment from the beginning to the end.

N.A./-


வீரன்
Group Project By:
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• S.Nimalaprakasan
• S.Gogulavarthan
Royal College
A/L 2004
VRAN Security System
Manual CD
RAM Creations
e-panai Multimedia Creations
Asgon Systems


'V'RAN
SECURITY SYSTEM
Electronic
high security
system
Asgon.
CD
V.34
USER MANUAL
&
OPERATING INSTRUCTIONS
PROJECT BY VIJIRAM NIMALAPRAKASAN AND GOGULAVARTHAN